DERWENT-ACC-NO: 1999-562242
DERWENT-WEEK: 200220
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TITLE: Vehicle **parking** system with **parking** periods started and finished using a **mobile telephone**

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PATENT-ASSIGNEE: MODUL SYSTEM SWEDEN AB[MODUN]

PRIORITY-DATA: 1998SE-0000888 (March 17, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 2002507804	March 12, 2002	N/A	016	G07F 007/02
W	September 23, 1999	E	017	G07F 007/00
WO 9948062 A1	September 18, 1999	N/A	000	G07F 007/00
SE 9800888 A	November 20, 2000	N/A	000	G07F 007/00
SE 513880 C2	November 9, 2000	N/A	000	G07F 000/00
NO 200004612 A	January 3, 2001	E	000	G07F 007/00
EP 1064626 A1				

DESIGNATED-STATES: JP NO US AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT S
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APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
JP2002507804W	N/A	1999WO-SE00420	March 17, 1999
JP2002507804W	N/A	2000JP-0537184	March 17, 1999
JP2002507804W	Based on	WO 9948062	N/A
WO 9948062A1	N/A	1999WO-SE00420	March 17, 1999
SE 9800888A	N/A	1998SE-0000888	March 17, 1998
SE 513880C2	N/A	1998SE-0000888	March 17, 1998
NO 200004612A	N/A	1999WO-SE00420	March 17, 1999
NO 200004612A	N/A	2000NO-0004612	September 15, 2000
EP 1064626A1	N/A	1999EP-0914837	March 17, 1999
EP 1064626A1	N/A	1999WO-SE00420	March 17, 1999
EP 1064626A1	Based on	WO 9948062	N/A

INT-CL_(IPC): G06F017/60; G07C001/30 ; G07F000/00 ; G07F007/00 ; G07F007/02 ; G07F017/24 ; H04M003/42 ; H04M011/00 ; G07C001/30 ; G07F017:24

ABSTRACTED-PUB-NO: WO 9948062A

BASIC-ABSTRACT: NOVELTY - Users start and end periods of **parking** over a **mobile telephone**. On the first occasion a user connects to the system a cash card is mechanically read by a **parking pay meter** or a cash card terminal or other equivalent mechanism. The data read from the card is stored in a database together with a user reference, e.g. the **mobile telephone** number or a personal code, and is used to collect **parking** charges from the user. A vehicle registration number may also be stored. Alternatively, a vehicle reference relating to two or more vehicles may be assigned to an individual user.

USE - Charging for vehicle **parking**.

ADVANTAGE - Allows simple **billing** procedures in a **mobile telephone** activated system.

CHOSEN-DRAWING: Dwg.0/2

TITLE-TERMS:
VEHICLE PARK SYSTEM PARK PERIOD START FINISH **MOBILE TELEPHONE**

DERWENT-CLASS: T01 T05 T07 W01

EPI-CODES: T01-J05A1; T05-G03A; T05-H02C3; T05-L01B; T05-L02; T07-F; W01-C01D3C; W01-C05B3C;

SECONDARY-ACC-NO:
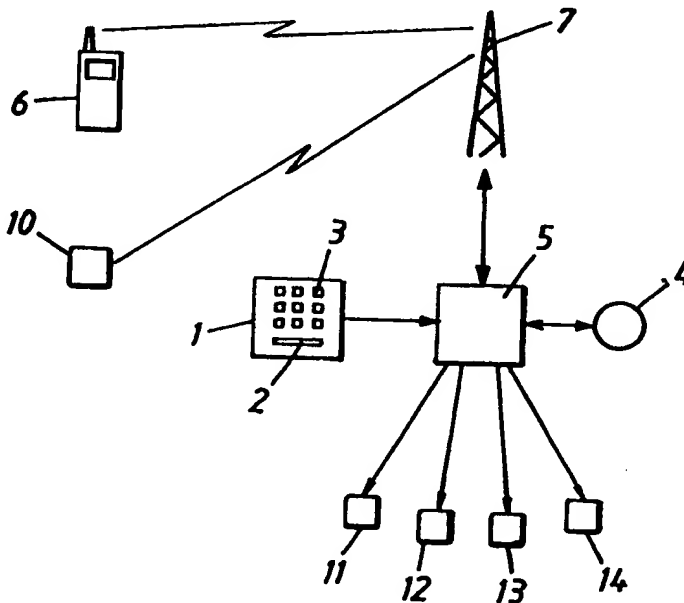Non-CPI Secondary Accession Numbers: N1999-415377

(54) Title: A VEHICLE PARKING SYSTEM

(57) Abstract

A parking system in which a mobile telephone can be used to commence and terminate a parking period and in which a user sends at least one code to a receiving computer at the commencement and termination of a parking period via a mobile telephone system or a permanent telephone system, characterised in that when a user shall connect himself/herself to the parking system for the first time in order to be able to park his/her vehicle with the aid of a telephone (6), either a pay meter (1), a cash card terminal or some corresponding device is caused to read mechanically a cash card owned by the user and accepted by the parking system as a means of payment, and in which read data is stored in a database (4) belonging to the computer (5) of the parking company; and in that at least one user specific reference is caused to be stored in said database (4) and tied to said data.

A VEHICLE PARKING SYSTEM

The present invention relates to a vehicle parking system, and primarily to a car parking system. More specifically, the invention relates to a parking system in which a mobile telephone can be used for commencing and terminating a parking period.

In cities, towns and other municipalities there will be one or more vehicle parking companies who has/have parking meters, so-called pay meters, distributed throughout the city or town in a number of different places, where streets, roads and large parking areas are the most common places in this regard.

In recent times, it has become more and more usual to pay parking fees with different types of bank card or cash card, as a supplement to coin payment. When a cash card is used, the person parking a vehicle will draw the card through a card reader on the parking meter.

A known paying system is so arranged that the person parking a vehicle will draw the card through a card reader on the parking meter, whereupon the meter stores the number of the cash card and the time at which the card was read.

The parking meter then issues a receipt, which is placed inwardly of the windscreen where it can be seen. When collecting the vehicle, the person concerned must return to the pay meter and again draw the cash card through the card reader of said meter. The pay meter therewith again stores

the number of the cash card and compares the time in question with the time at which the cash card was earlier drawn through the card reader. The pay meter then calculates the parking fee and stores the fee together with the number of the card to be charged, and issues a receipt.

All known cash card systems that use a subsequent billing routine are based on the principle of requiring the person parking a vehicle to visit a parking meter both when commencing a parking period and when terminating said period.

There is known to the art a vehicle parking system in which a parking period is commenced and terminated with the aid of a mobile telephone. According to one such known system described in International Patent Application WO 93/20539 there is sent at the commencement and termination of each parking period, via the mobile telephone, a code that identifies the parking place used, a code that identifies the vehicle concerned, and a code unique to the driver of the vehicle. It is proposed that the fee for parking the vehicle is billed through the standard telephone billing system.

A system of this kind is not easily administered, since the system presumes that at least the parking company signs some form of agreement with the telephone company. However, the telephone company has no interest in performing billing services without being remunerated.

Furthermore, the system requires the use of many identification items, which renders use of the system unwieldy.

These problems are solved by the present invention.

The present invention thus relates to a parking system in which parking of a vehicle can be commenced and terminated through the medium of a mobile telephone and where at the commencement and termination of a parking period a user of the system sends at least one code to a receiving computer via a mobile telephone system or a fixed telephone system, and is characterised in that when a user wishes to connect himself/herself to the parking system in order to be able to park his/her vehicle with the aid of a telephone, a pay meter, a cash card terminal or the like, is caused to mechanically read a cash card owned by the user and accepted by the parking system as a means of payment, wherein data read from the card is stored in a database belonging to the computer of the parking company; and in that at least one user specific reference is stored in and tied together with said data in the database.

The invention will now be described in more detail with reference to exemplifying embodiments thereof and also with reference to the accompanying drawing, in which
- Figure 1 is a block diagram illustrating an inventive parking system; and
- Figure 2 illustrates one embodiment of a user specific reference.

The present invention relates to a vehicle parking system with which a mobile telephone can be used to commence and terminate a parking period and with which at the commencement and the termination of a parking period a user sends at least one code to a receiving computer through the medium of a

mobile telephone system or fixed telephone system. The parking system can thus be used with the aid of both mobile telephones and permanently installed telephones.

5   When a user wishes to connect himself/herself to the parking system for the first time, in order to be able to park his/her vehicle with the aid of a telephone, either a pay meter 1, a cash card terminal or corresponding device is caused to mechanically read a cash card that is owned by the

10   user and accepted by the parking system as a means of payment. For instance, the pay meter may be of the kind described in Swedish Patent specification 9601112-7. This type of pay meter includes a cash card reader 2 and a keyboard 3 for keying-in alphanumerical characters. However,

15   the cash card may be read with the aid of a cash card reader in a manned office for the payment of parking fees.

The data read from the card by the cash card reader is stored in a database 4 belonging to the parking system and is also

20   sent conveniently to a server 5 associated with the parking company concerned, said server storing said data in its database 4. At least one user specific reference is stored in the database 4 and tied to the cash card data stored therein.

25   The user specific reference may have various different forms.

According to a first embodiment, the user specific reference is the number of the telephone to be used in conjunction with a parking period. The telephone number is delivered to the

30   server, when a user connects himself/herself to the system.

The telephone number will be sensed by the server 5 of the parking system when the telephone 6 is connected to a telephone number belonging to said system. With regard to a mobile telephone system, e.g. a GSM system, the telephone 6

5   is connected to the server 5 of the parking company via a base station 7.

According to this method, a parking fee is billed on the cash card concerned, which is tied to the telephone number in the

10   database by sensing the telephone number in question.

According to a second embodiment, the user specific reference is a personal code for use when parking a vehicle. This code may be a four digit PIN code sent by the user to the server 5

15   of the parking company over the telephone when parking shall be commenced or terminated. This code can either be chosen by the user or by the parking system. In this case, the code validates billing of the parking fee on the cash card concerned.

20

In this latter case, the user can obtain his/her code when connecting with the system, via a printer housed in the pay meter 1, said printer printing out a paper slip on which the code is printed.

25

A personal code has the advantage of enabling any telephone whatsoever to be used in conjunction with parking a vehicle. The advantage of using the telephone number as a reference is that no code need be delivered to the system.

30

According to one highly preferred third embodiment of the invention, a plastic card 8 of credit card format is provided

when a user joins the system. The plastic card includes a machine readable code that constitutes the user specific code. The code may, for instance, be a bar code 9 written onto the card. This plastic card 8 is intended to be placed in the vehicle in a place where it can be read by a parking attendant from outside the parked vehicle.

In the case of this embodiment, the user specific reference in the form of said plastic card may include the same code as that sent by the user to the system via the telephone. Alternatively, the code on the plastic card may differ from the code sent to the system via the telephone.

According to a preferred embodiment, the telephone number can be sensed by the server 5 when the server is called, said telephone number being one user specific reference and the code-carrying plastic card being another user specific reference.

The advantage of using a plastic card having a code that can be read by a card reader from outside the vehicle is that the user is able to park legitimately any vehicle whatsoever, by placing the card in the vehicle concerned in a place where the card can be seen and by telephoning the server 5 of the parking company at the commencement and termination of the parking period. It will be apparent that no vehicle specific reference is then required in order to operate the system.

However, in one preferred embodiment of the invention a vehicle specific reference, such as the vehicle registration number can be used in conjunction with the system and entered into said database 4 and then be tied to the entered cash

card data together with the user specific reference in the form of said telephone number or said PIN code. The vehicle registration number may alternatively be entered via the keyboard 3.

One advantage afforded by such an embodiment is that the use of a plastic card is not required and that a parking period can be commenced and terminated by telephone.

According to one highly preferred embodiment, the parking system is informed of the zone in which a vehicle is parked by telephone, at the commencement of a parking period.

Because parking fees often differ in different parts of a town or city, this embodiment enables the correct parking fee to be charged in accordance with the area in which the vehicle is parked. Moreover, the parking fee for so-called resident parking may be lower than the parking fee for non-residents. The parking zones are conveniently shown on signs, for instance at respective ends of a street. A parking zone may include one or more streets.

The embodiment in which the system is informed of the zone in which a vehicle is parked will also facilitate a check as to whether parking has been reported via the telephone or not.

A parking zone can be indicated in two different ways. One way is for the user to dial the telephone number of the server 5, for instance 1234567, followed by, e.g., a four-digit number of which the three first digits identify the parking zone concerned and the last digit discloses whether

the person parking the vehicle is a resident in that zone or not.

Another way is for the user and the server to interact. For instance, the user calls the server 5 by dialling 1234567, wherewith the server generates a synthetic speech asking the user to identify the zone in which the vehicle is parked. The user then enters the number of the parking zone. The server then asks the user if he/she is a resident in the zone concerned, whereafter the user sends, e.g., a digit to the server in response to this query.

When a vehicle specific reference is entered into the system when a user joins said system, it is beneficial to cause a vehicle specific reference for two or more vehicles to be entered into the database and there tied to the same cash card data and the same user specific reference, e.g. the user's telephone number stored in said database. In this case, the parking system is informed by telephone that parking of the vehicle concerned is commenced. After having sensed a certain calling telephone number, the server senses that two or more vehicle specific references are tied to the calling telephone number. The server will then deliver the following speech messages for instance, "if you wish to park the vehicle with registration number DSJ 33, press 1; if you wish to park the vehicle with registration number MER 777, press 2," etc.

In the simplest case, the cash card data, telephone number and vehicle registration number are tied to each other in the database 4 of the server 5.

When parking shall be commenced, the user need only call the server. The server senses the telephone number and then inquires, e.g., whether parking is to be commenced and then asks the user to enter the number of the parking zone.

5   Parking is therewith commenced.

When parking is terminated, the user again calls the server 5 which therewith senses the telephone number. The server scans the database in which information to the effect that parking

10 has earlier commenced is stored. The server then asks whether parking of the vehicle shall be terminated. The user then appropriately confirms that parking shall be terminated, for instance by entering a code, such as the digit 1.

15 The server 5 calculates the parking fee on the basis of the time for which the vehicle was parked, the parking zone and the type of parking concerned. The server 5 then ties the parking fee to the cash card read by the parking system at the time when the user connected himself/herself to the

20 system. The cash card company concerned is billed for the parking fee at a later stage, said company, in turn, billing the owner of the cash card, i.e. the user.

In this case, the user need only inform the system of the

25 number of the parking zone at the commencement of a parking period, and confirmation that parking shall be terminated.

In this case, the parking attendants are equipped with a portable communications unit 10 in cordless connection with

30 the server 5. This communications unit may be constructed in accordance with the control unit described in Swedish Patent Specification 9700054-1. The parking attendant enters the

parking zone concerned into the control unit and the control unit fetches from the server a so-called parked vehicle list relating to said parking zone, i.e. a list of the registration numbers of those vehicles with which the commencement of a parking period has been announced. The control unit then compares the registration number read-off with the list of parked vehicles and indicates when a commenced parking period has not been announced. The parking attendant then issues a parking fine.

In the alternative case when a user specific reference in the form of a plastic card is placed in the vehicle where it can be seen, instead of the vehicle registration number, the plastic card is read by the control unit and compared with a list of plastic card codes on which commenced parking periods have been noted.

As will be readily understood from the aforegoing, a user is able to connect himself/herself to the system very easily, regardless of which of the aforesaid embodiments is used. All that the user need do is to find a pay meter 1 that is equipped to receive a connection to the system or to a manual pay office. The cash card is read and a user specific reference is given or generated. The vehicle registration number is also given, depending on the embodiment used. Connection with the system is then complete, and the user is able to utilise a telephone parking facility. Only a minimum of manual handling is required in connecting a user to the system.

On the basis of existing cash cards belonging to the user, such as American Express, Eurocard, Visa, gasoline pay cards,

Smart Cards, etc., that have already been accepted by parking companies for billing purposes, billing of a parking fee can be readily effected by the parking company concerned, simply by said company generating a billing order to respective cash

5   card companies 11-14 in the same way as that used at present for paying a parking fee with a cash card. No change in existing billing routines is therefore necessary.

It will be obvious that the drawbacks mentioned in the

10   introduction are eliminated by the present invention.

Although the invention has been described with reference to a number of exemplifying embodiments thereof, it will be understood that these embodiments can be modified with

15   respect to codes, vehicles specific references, etc.

It is preferred in regard of all embodiments that a parking period can be terminated by passing the cash card through the cash card reader of a pay meter and the user inserting the

20   user specific reference. These data are therewith transferred to the server 5.

It will therefore be understood that the present invention is not restricted to the aforedescribed and illustrated

25   embodiments thereof and that variations can be made within the scope of the following Claims.

CLAIMS

1.   A parking system in which a mobile telephone can be used to commence and terminate a parking period and in which a user sends at least one code to a receiving computer at the commencement and termination of a parking period via a mobile telephone system or a permanent telephone system, **characterised** in that when a user shall connect himself/herself to the parking system for the first time in order to be able to park his/her vehicle with the aid of a telephone (6), either a pay meter (1), a cash card terminal or some corresponding device is caused to read mechanically a cash card owned by the user and accepted by the parking system as a means of payment, and in which read data is stored in a database (4) belonging to the computer (5) of the parking company; and in that at least one user specific reference is caused to be stored in said database (4) and tied to said data.

2.   A parking system according to Claim 1, **characterised** in that the user specific reference is the number of the telephone (6) used when parking a vehicle.

3.   A parking system according to Claim 2, **characterised** in that the telephone number is sensed by the parking system computer (5) in conjunction with connecting telephone (6) to a telephone number belonging to the parking system.

4.   A parking system according to Claim 1, **characterised** in that the user specific reference is a personal code to be used when parking a vehicle.

5.   A parking system according to Claim 4, **characterised** in
that the user specific reference issued when connecting to
the system is produced by a printer belonging to said parking
system.

5

6.   A parking system according to Claim 5, **characterised** in
that the user specific reference is a plastic card (8) or
some corresponding data carrier, and in that the reference is
comprised of a machine readable code (9) applied to the card.

10

7.   A parking system according to Claim 1, 2, 3, 4 5 or 6,
characterised in that a vehicle specific reference, such as
the vehicle registration number, is entered into said
database (4) when connecting to the system, and is tied to

15   the cash card data and the user specific reference stored in
said database.

8.   A parking system according to Claim 7, **characterised** in
that a vehicle specific reference for two or more vehicles is

20   entered into said database (4) when connecting to the system,
and tied to cash card data and the same user specific
reference stored in said database; and in that the parking
system is informed when parking of the vehicles concerned
commences, via said telephone (6).

25

9.   A parking system according to any one of the preceding
Claims, **characterised** in that the parking system is informed
of the zone in which parking of a vehicle is commenced, via
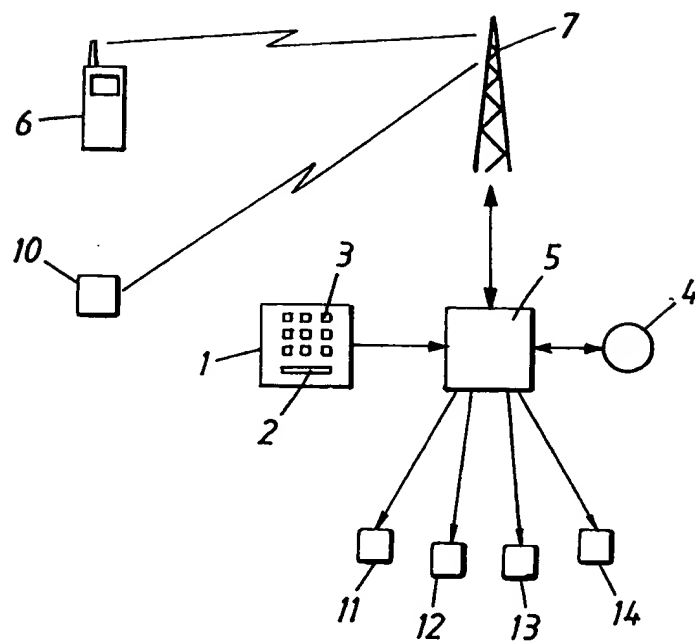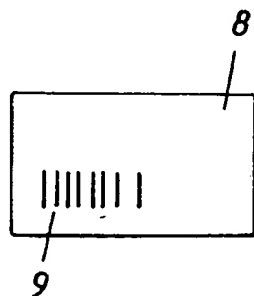said telephone (6).

30

Fig.1

Fig.2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 99/00420

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: G07F 7/00, H04M 3/42 // G07C 1/30, G07F 17/24
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: G07C, G07F, H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, JAPIO, EDOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 9719568 A1 (VAZAN, BEHRUZ), 29 May 1997 (29.05.97) --	1-9
Y	WO 9611453 A1 (PARKIT OY), 18 April 1996 (18.04.96) --	1-9
Y	WO 9735283 A1 (MODUL ELEKTRONIK AB), 25 Sept 1997 (25.09.97) -- --------	1-9

☐ Further documents are listed in the continuation of Box C.   ☒ See patent family annex.

*	Special categories of cited documents:
"A"	document defining the general state of the art which is not considered to be of particular relevance
"E"	erlier document but published on or after the international filing date
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O"	document referring to an oral disclosure, use, exhibition or other means
"P"	document published prior to the international filing date but later than the priority date claimed

"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X"	document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 June 1999	12 -07- 1999

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Form PCT/ISA/210 (second sheet) (July 1992)

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
WO	9719568	A1	29/05/97	FI	970767	A	20/10/97
WO	9611453	A1	18/04/96	AU	3655095	A	02/05/96
				FI	944738	A	08/04/96
WO	9735283	A1	25/09/97	EP	0891605	A	20/01/99
				NO	980956	A	30/04/98
				NO	984382	A	04/11/98
				SE	508038	C	17/08/98
				SE	9601112	A	23/09/97